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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 HANFORD PROJECT OFFICE
712 SWIFT BOULEVARD, SUITE 5
RICHLAND, WASHINGTON 99352

January 29, 1997

Jeffrey M. Bruggeman
U.S. Department of Energy
P.O. Box 550, HO-12
Richland, Washington 99352

Re: Approved Action Memorandum for the 100 B/C Area Ancillary Facilities and the 108-F Building Removal Action .

Dear Mr. Bruggeman:

Enclosed is the approved Action Memorandum for the 100 B/C Ancillary Facilities and the 108-F Building Removal Action. Please note, prior to shipping waste for disposal EPA must approve waste designation sampling plans.

The only waste stream currently approved for shipment to disposal facilities is asbestos waste from the 105-C Building. The EPA is currently reviewing the 105-C Characterization Survey Data Report. EPA will provide comments pending receipt of the requested information regarding those waste streams not covered in the 105-C Characterization Report.

If you have any questions please contact me at (509) 376-8631.

Sincerely,

Dennis Faulk
100 Area Project Manager

Enclosure

cc: Greg Eidam, BHI
Administrative Record, (100-BC-2, 100-FR-1 Operable Units)

Action Memorandum; 100 B/C Area Ancillary Facilities and the 108-F Building Removal Action, U.S. Department of Energy Hanford Site, Richland, WA

This Action Memorandum constitutes approval of the U.S. Department of Energy's (USDOE) proposed removal action as outlined in the Engineering Evaluation / Cost Analysis, DOE/RL-96-85, Rev. 0 (EE/CA) for disposal of 100 B/C Ancillary Facility and 108-F Building wastes.

A 30 day public comment and review period was held from November 18, 1996 through December 17, 1996. All comments received supported taking this action.

This removal action eliminates the potential for a release of hazardous substances in the 100- B/C and 100-F Areas that could adversely impact human health and the environment, is protective of worker personnel, and minimizes disposal costs. The volume of waste to be disposed to the Environmental Restoration Disposal Facility (ERDF) has been incorporated into ERDF capacity planning and will require no further expansion.

I. PURPOSE

The purpose of this non-time critical removal action is to mitigate the threat to site workers, public health, and the environment by removing buildings and disposing of waste generated during decontamination and decommissioning of the 105-C Reactor Building, 111-B Decontamination Station, 115-B Gas Line Pressure/Vacuum Seal House, 118-C-4 Horizontal Control Rod Cave, 119-B-Exhaust Air Sampler Building, and the 108-F Biology Laboratory.

II. BACKGROUND

Pursuant to the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA), the United States Environmental Protection Agency (EPA) recommended the 100 Area of the USDOE operated Hanford Site for inclusion on the National Priorities List (NPL) on June 24, 1988. In November 1989, the 100 Area was added to the NPL. The 100 Area is located in the northern part of the Hanford Site along the shore of the Columbia River and includes six reactor areas, including the B/C and F Area. The EPA has been designated as lead regulatory agency for this project.

A. Site Description and Contaminants of Concern

The 100 Areas include many liquid and solid waste disposal sites used to support past reactor operations. To organize cleanup efforts under CERCLA, these sites were subdivided into operable units consisting of waste sites that were related both geographically and by waste site

type. The 100-B/C Area contains three operable units, two that consist of liquid and solid waste disposal sites in the 100-B/C Area (100-BC-1 and 100-BC-2 Operable Units) and one that consists of contaminated groundwater underlying the 100-B/C Area (100-BC-5 Operable Unit). The 100-F Area is also made up of three operable units, two that consist of liquid and solid waste disposal sites in the 100-F Area (100-FR-1 and 100-FR-2 Operable Units) and one that consists of contaminated groundwater underlying the 100-F Area (100-FR-3 Operable Unit).

Five of the facilities addressed by this action memo are located in the 100-B/C Area, site of the B and C Reactors . The 100-B/C Area covers a total area of 1834 hectares (742 acres) and is the furthest upstream of the reactor areas. The B Reactor, constructed in 1943, operated from 1944 through 1968, when it was retired from service. The C Reactor, constructed in 1951, operated from 1952 to 1969, when it was also retired from service. The C Reactor shared some of the support facilities constructed for the B Reactor. Most of the remaining 100-B/C Area facilities have been deactivated and are awaiting final decommissioning. Active facilities, such as the pump station for the Hanford Site water supply system (181-B and 182-B), were not within the scope of the EE/CA.

One of the facilities addressed by this action memo is located in the 100-F Area, site of the F Reactor. The 100-F Area covers a total area of 256 hectares (632 acres) and is the furthest downstream of the reactor areas. Construction of the F Reactor began in December 1943 and it was operated from 1944 through 1965. The 100-F Area originally included several major support facilities including structures associated with the treatment and storage of reactor cooling water, and support buildings for biological experimentation. Most of the 100-F facilities were deactivated with the reactor and have since been demolished. Of the dozen or so reactor-related structures, only the 105-F Reactor Building and the 108-F Biology Laboratory remain standing today.

A description of the facilities covered under this action is as follows:

111-B Decontamination Station

The 111-B Decontamination Station was the first fuel failure inspection facility and was used from 1951 to 1968. Irradiated fuel sources were stored and examined in steel tanks filled with water. Waste from the examination tanks was stored in subsurface concrete tanks. The tanks were filled with concrete several years ago to stabilize internal contamination. The 111-B facility was also used as a decontamination station and storage location for irradiated reactor components.

In 1983, the above ground structure was demolished but the concrete floor slab and subsurface tanks were left in place. A truck ramp to the tanks was filled with soil and a concrete pad was poured over the entire structure. The remaining portion of the facility is expected to be contaminated with radioactive fission products such as strontium 90, cesium 137, cobalt 60, Europium 155, as well as plutonium. Chemicals of concern include solvents, sodium dichromate, sodium oxalate, and sodium sulfamate.

115-B Gas Line Pressure/Vacuum Seal House

The 115-B Gas Line Pressure/Vacuum Seal House consists of a small wooden frame structure at grade used to provide shelter for monitoring instruments, a concrete structure that is primarily below-grade and an attached gas duct that is approximately 6 feet below the soil surface. The subsurface of this auxiliary structure is connected to the Reactor Building by concrete ducts which house piping through which reactor block inert cover gas recirculated. The cover gas was monitored by the equipment within the above-ground portion of the 115-B Gas Line Pressure/Vacuum Seal House. Contamination expected in the facility includes fission products, mercury, and lead.

118-C-4 Horizontal Control Rod Cave

The 105-C Horizontal Control Rod Storage Cave is a reinforced concrete bunker. The rod cave was used to store radiologically contaminated control rod tips. The potential exists for stored contaminated reactor parts to be present within this facility. Radioactive contamination is known to be present based on radiation surveys, but the amount and type are unknown. Hazardous materials include lead and lead oxide.

119-B Exhaust Air Sampler Building

The current 119-B Exhaust Air Sampler Building is a single-story wood frame structure. The building sits on a concrete slab. The building was potentially used for storage of solvents or other petrochemicals. Visual inspection of the building has identified evidence of solvent and/or petrochemical contamination. There is no evidence of radiological contamination.

105-C Reactor (Waste Disposition Only)

In 1993, a final environmental impact statement was issued under the *National Environmental Policy Act* (NEPA) which evaluated alternatives for decommissioning eight of the nine reactors in the 100 Area of the Hanford Site, including the C Reactor . The decommissioning alternative selected in the NEPA decision is safe storage followed by one-piece removal of the reactor block to an on-site, low-level waste burial area. Preparation of the reactor block for storage includes: equipment and material removal from the 105-C Reactor Building; decontamination of equipment and structures; dismantlement/demolition of structures outside the reactor shield walls; construction of a safe storage enclosure utilizing the reactor shield walls and existing reactor block biological shield and installing a new roof; installation of electrical, mechanical, control and monitoring systems for use during surveillance, and restoration of the site following decommissioning and demolition. Radioactive contamination includes mixed fission products, and plutonium. Chemical contaminants include lead, mercury, asbestos, and polychlorinated biphenyls.

108-F Biology Laboratory

The 108-F Biology Laboratory was constructed in 1944 and was intended to be used as a facility for the mixing and addition of chemicals used in the treatment of the reactor cooling water. Shortly after F Reactor began operation, it was determined that the facility was not needed for

this purpose. In 1949, the building was converted for use as a biological laboratory. The building is a rectangular four-story, steel framed, concrete block structure with a concrete foundation and floors. Potential contaminants include Plutonium, Strontium- 90, Cobalt-60, and Cesium-137. Mercury was used in the building and may be present in laboratory drains. Because of the age of the facility, polychlorinated biphenyls (PCB) are expected in elevator gear box oils. Lead shielding and counterweights remain within the facility. In addition, the building contains friable asbestos.

III. THREAT TO PUBLIC HEALTH, WELFARE OR ENVIRONMENT

The facilities addressed in the Action Memo are known to be contaminated with hazardous waste constituents. A potential threat exists to human health and the environment through the deterioration of the buildings which could result in a release of hazardous constituents to the air or soil.

IV. ENDANGERMENT DETERMINATION

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this Action Memorandum, may present an endangerment to public health, welfare, or the environment.

V. PROPOSED ACTION AND ESTIMATED COSTS

A. Bechtel Hanford Company (BHI), the Environmental Restoration contractor for USDOE, prepared an Engineering Evaluation/Cost Analysis (EE/CA) in order to develop removal alternatives that were appropriate for the decontamination and decommissioning of the various 100 Area facilities. The EE/CA proposed four alternatives. They are described as follows:

1. NO ACTION

Under the no-action alternative, access to the facility would be restricted but no action would occur to address the hazards posed by the facility. The 100 Area facilities would continue to deteriorate. Without any active S&M, the rate of deterioration will accelerate. Although Hanford Site 100 Area institutional controls would continue to help prevent personnel or worker entry to the facility, releases of contaminants from the facility would ultimately occur. The cost for this alternative would be negligible.

2. CONTINUED SURVEILLANCE AND MAINTENANCE

Under this alternative, the facilities would be maintained in their current condition. The current level of S&M would be performed to minimize the potential for environmental release, protect workers, and maintain compliance with state and federal regulations and DOE orders. Contaminated materials and surfaces would remain in place. As the facilities continue to age and deteriorate, it is expected that maintenance requirements necessary to continue safe and environmentally protective conditions would increase. Costs for this alternative is estimated to be approximately 192,000 dollars per year. This figure does not include the cost of a new roof system on the 105-C Reactor building. An additional cost of 1.5 million would be incurred to replace the roof which is failing.

3. DECONTAMINATION, DECOMMISSIONING, AND DISPOSAL AT THE ENVIRONMENTAL RESTORATION DISPOSAL FACILITY

This alternative consists of three components: decontamination, demolition, and disposal. Decontamination would consist of either physically removing contaminants or "fixing" contaminants in place to prevent mobility during demolition. Standard methods of physical removal include washing with water (possibly containing detergent), scraping, scabbling, and sandblasting. In some instances, physical removal of contaminants may not be feasible or cost effective. In these cases, the contamination may be "fixed" so it remains relatively well attached to the construction materials or so it is less readily disturbed during subsequent demolition activities. Examples of fixing contaminants in place include painting, applying asphalt, and spreading plastic sheeting.

Demolition of clean structures normally occurs to a depth of up to 1 m (3 ft) below grade. Demolition may be preceded by dismantlement of facility components, such as severing and removing ductwork or selectively removing a facility wall or structure. Demolition itself generally means large-scale facility destruction using a wrecking ball, explosives, or other industrial methods. Demolition techniques would be designed to allow building materials to be recycled when possible. In addition, soils that are contaminated with hazardous substances will be cleaned up consistent with the interim action ROD signed in September 1995 for the 100-B/C, D, H Area operable units. Soils will be cleaned up to 15 millirem above background for radionuclides and to the Washington State Model Toxics Control Act method B standard for organic and inorganic constituents. In the event that large volumes of contaminated soil is encountered or removal of contaminated soil inhibits reactor safe storage activities the removal of contaminated soils may be deferred to the remedial actions program. The decision to defer contaminated soils to the remedial action program will require concurrence by EPA.

Rubble generated during demolition would be segregated by material type (e.g., wood, concrete, metal) and evaluated for contamination. Sampling and analysis would be performed as necessary to facilitate this evaluation. Materials that are not contaminated or that can be cost-effectively

decontaminated would be reused or recycled to the extent possible. Materials that are contaminated and for which no reuse, recycle, or decontamination option is identified would be assigned an appropriate waste designation (e.g., solid, radioactive, dangerous, mixed). Wastes that are designated as radioactive, dangerous, or mixed waste would be transported to the ERDF in the 200 West Area of the Hanford Site for disposal.

Both low-level radioactive and nonradioactive liquid wastes may be encountered or generated during decommissioning. Radioactive liquids may be sent to the Hanford Effluent Treatment Facility (ETF) provided the waste meets ETF acceptance standards and treatment to satisfy ARARs. Small amount of liquids may be treated or stabilized (to meet applicable waste acceptance criteria) and sent to the ERDF for disposal. If transuranic waste above ERDF waste acceptance criteria is encountered, it will be sent to the Hanford Central Waste Complex for storage. CERCLA Section 104(d)(4) states where two or more non-contiguous facilities are reasonably related on the basis of geography, or on the basis of the threat or potential threat to the public health or welfare or the environment, the President may, at his discretion, treat these facilities as one for the purposes of this section.

The preamble to the NCP clarifies the stated EPA interpretation that when non-contiguous facilities are reasonably close to one another and wastes at these sites are compatible for a selected treatment or disposal approach, CERCLA Section 104(d)(4) allows the lead agency to treat these related facilities as one site for response purposes and , therefore, allows the lead agency to manage waste transferred between such non-contiguous facilities without having to obtain a permit. Therefore, the 100 Area NPL site and the ERDF,ETF,Low Level burial Grounds, and Central Waste Complex are considered to be a single site for response purposes under this Action Memo. It should be noted that the scope of work covered in this action memorandum is for those facilities and waste contaminated with hazardous substances. Materials encountered during this action which are not contaminated with hazardous substance will be dispositioned by the USDOE. program. Costs for this alternative are estimated to be approximately 5.5 million dollars. The bulk of the costs are associated with the removal of the 108-F Facility which has an estimated removal cost of 3.9 million dollars. It should be noted that the cost contained in this alternative do not include the removal of the 105-C Reactor Building which is estimated at approximately 18 million dollars. The costs are not included since this action memo only addresses the waste disposal aspects of the removal action.

4. DECONTAMINATION AND DEMOLITION (OTHER HANFORD FACILITY DISPOSAL)

This alternative would be identical to the third alternative except for the location of waste disposal. Low-level radioactive wastes would be disposed at the Low Level Burial Ground (LLBG) located in the 200 Area of the Hanford Site. The LLBG are unlined trenches in which low-level radioactive waste is placed and covered with soil. Dangerous wastes that are not radioactive would be packaged and transported to an offsite-permitted hazardous waste disposal facility. Any offsite facility would be required to meet all requirements for RCRA dangerous waste disposal including double-liner, leachate collection, and cover and be authorized to accept CERCLA offsite waste. Mixed wastes would be disposed at the W-025 Mixed Waste Trench (W-025) located in the 200 West Area. W-025 is an onsite RCRA-permitted disposal facility that is constructed with double liner, leachate collection and monitoring, and cover. Estimated costs

for this alternative is 6.6 million dollars.

B. Compliance with ARAR's

The selected remedy will comply with the federal and state ARAR's identified below. No waiver of any ARAR is being sought. The ARAR's identified for the 100 Area Decontamination and Decommissioning work are the following:

- Safe Drinking Water Act (SDWA), 40 USC Section 300, Maximum Contaminant Levels (MCL's) for public drinking water supplies are relevant and appropriate for establishing cleanup goals that are protective of groundwater.

- Model Toxics Control Act Cleanup Regulations (MTCA), Chapter 173-340 WAC, risk-based cleanup levels are applicable for establishing cleanup levels for soil, structures and debris.

- Clean Water Act, 33 USC Section 1251, for Protection of Aquatic Life are relevant and appropriate for establishing cleanup goals that are protective of the Columbia River.

- Water Quality Standards for Waters of the State of Washington, Chapter 173-201-035 WAC are relevant and appropriate for establishing cleanup goals that are protective of the Columbia River.

- State of Washington Dangerous Waste Regulations, Chapter 173-303 WAC are applicable for dangerous wastes encountered.

- RCRA Subtitle C (40 CFR 262) establishes standards for generators of hazardous wastes for the treating, storage, and shipping of wastes. Applicable to the transportation of hazardous wastes.

- U.S. Department of Transportation Requirements for the Transportation of Hazardous Materials (49 CFR Parts 100 to 179) will be applicable for any wastes that are transported offsite.

- Hazardous Materials Transportation Act (49 USC 1801-1813), Applicable for transportation of potentially hazardous materials, including samples and wastes.

- RCRA Land Disposal Restrictions (40 CFR 268) applicable for disposal of materials designated as dangerous waste and subject to LDR's.

- Minimum Standards for Construction and Maintenance of Wells (Chapter 173-160 and 162 WAC) Applicable regulations for the location, design, construction, and abandonment of water supply and resource protection wells.

- National Archeological and Preservation Act (16 USC Section 469); 36 CFR Part 65, is relevant and appropriate to recover and preserve artifacts in areas where an action may cause irreparable harm, loss, or destruction of significant artifacts.

- National Historic Preservation Act (16 USC 470, *et. seq.)*; 36 CFR Part 800, is relevant and appropriate to actions in order to preserve historic properties controlled by a federal agency.

- Endangered Species Act of 1973 (16 USC 1531, *et. seq.*); 50 CFR Part 200; 50 CFR 402, is relevant and appropriate to conserve critical habitat upon which endangered or threatened species depend. Consultation with the Department of the Interior is required.

  State of Washington,Department of Health WAC 246,247, is applicable to the release of airborne radionuclides.

Other Criteria, Advisories, or Guidance to be Considered for this Action (TBC's)

- 40 CFR Part 196. Draft Proposed Rulemaking by EPA for cleanup of radionuclides in soils to 15mrem/year above natural background.

- 10 CFR Part 20. Draft Proposed Rulemaking by NRC for cleanup of radionuclides in soils to 15mrem/year above natural background, and a goal of 3 mrem/year.

- Draft Environmental Restoration Disposal facility Waste Acceptance Criteria (June 1995) that delineates primary requirements including regulatory requirements, specific isotopic constituents and contamination levels, the dangerous/hazardous constituents and concentrations, and the physical/chemical waste characteristics that are acceptable for disposal of wastes at ERDF.

- 59 FR 66414. Radiation Protection Guidance for Exposure to the General Public. EPA protection guidance recommending (non-medical) radiation doses to the public from all sources and pathways to not exceed 100 mrem/year above background. It also recommends that lower dose limits be applied to individual sources and pathways. One such individual source is residual environmental radiation contamination after the cleanup of a site. Lower doses limits and individual pathways are referred to as secondary limits.

- EPA OSWER 9834.11, Revised Procedures for Planning and Implementing Off-Site Response Actions, November 13, 1987. This directive provides procedures for off-site disposal of CERCLA wastes.

C. Project Schedule

The non-time-critical removal action to address these facilities are scheduled to begin in

February 1997 and are expected to continue through September of 1999. The USDOE is required to submit waste designation sampling plans for EPA approval prior to shipping waste for disposal. In addition, USDOE is required to submit verification sampling plans for EPA approval.

VII. OUTSTANDING POLICY ISSUES

In 1996, the ERDF Record of Decision was modified by an Explanation of Significant Difference that identified the ERDF as an appropriate disposal site for a variety of Hanford Site cleanup wastes, including waste generated during site characterization, deactivation, and decommissioning (EPA, et al 1996). Therefore, there are no policy issues associated with this removal action.

VIII. SELECTED ALTERNATIVE

Based on overall effectiveness, long- and short-term effectiveness, implementability, and cost, the selected removal alternative for the five 100-B/C Area facilities and the 108-F Biology Laboratory is to decontaminate and demolish the structures and dispose of associated wastes. Waste will be disposed at ERDF with the option of disposing hazardous waste offsite and utilizing existing Hanford Site storage or disposal facilities for waste not meeting ERDF waste acceptance criteria . Before wastes are shipped to any facility other than ERDF the EPA will need to make an acceptability determination that the waste facility is acceptable to receive wastes from a CERCLA action. This alternative removes the potential for a release of hazardous substances that could adversely impact human health and the environment, is protective of workers, reduces S&M costs, and is consistent with other cleanup activities in the 100 Area.

This decision document represents the selected removal action for the 111-B Decontamination Station, 115-B gas Line Pressure/Vacuum Seal House, 118-C-4 Horizontal Control ROD Cave, 119-B Exhaust Air Sampler Building, 105-C Reactor Waste, and the 108-F Biology Laboratory at the Hanford Site, Richland, Washington; developed in accordance with CERCLA as amended, and not inconsistent with the NCP. This decision is based on the Administrative Record for these sites.

Signature sheet for the USDOE Hanford Action Memorandum for the 100 B/C Ancillary Facilities and the 108-F Building Removal Action between the U.S. Department of Energy and the U.S. Environmental Protection Agency.

Randall F. Smith

Randall F. Smith
Director, Environmental Cleanup Office
U.S. Environmental Protection Agency, Region 10

1/16/97
Date

Signature Sheet for the Action Memorandum for the 100-B/C Area Ancillary Facilities and the 108-F Building Removal Action between the U.S. Department of Energy and the U.S. Environmental Protection Agency.

Lloyd L. Piper, Deputy Manager
U.S. Department of Energy
Richland Operations Office

Date 1/28/97